

PREPARATION FOR THE OPERATIONS FR-2 -- E O L E

NOTE No.2

OBJECT: PROJECT OF DEFINING TECHNICAL EQUIPMENT OF THE
E O L E OPERATIONS CENTER

Centre National d'Etudes Spatiales
Centre Spatial de Bretigny
Division Reseau
Centre d Operations

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FACILITY FORM 602

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Space Center of Bretigny

"Network" Division

Operations Center

Preparation for the operations

FR-2

EOLE

Note No. 2

Object: Project of defining technical equipment of the EOLE
operations center -

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I Generalities

The technical material intended to equip this center is essentially composed of the following elements:

A - 2 desks of 3 work posts, provided with the following elements:

- visualization joined to the 360/40 calculator
- peripheral IBM 2740 joined to the 360/40 calculator
- peripheral IBM 2260 joined to the 1800 calculator (mobile, non-integrated equipment)
- telephone and interphone equipment
- telegraph equipment
- distance command device for liminous signaling
- video receiver joined to the television circuit of the operation room
- slide projector

B - 1 general situation table containing the following elements:

- a numerical analysis - calculation timer joined to the operations room equipment
- a numerical timer giving the TU time
- two luminous signaling tables of availability (satellite control stations, balloon launching stations, other ground operations)
- a projection screen
- a signaling table for the 200 bauds connections in operation (connection with the technical room)

C - 1 sounding equipment joined to the sounding of the operations room

D - 1 table, planning type, for the purpose of displaying general information

E - 1 microfilm reader reproducer

F - All of the wire equipment necessary for the operation of these materials.

I - 1 Make-up of the desks

The structure of the two desks will be, if possible, identical. It is desirable to use a strong material, functional and without unnecessary trim.

The dimensions are not critical and are approximately:

- width 3 m
- depth 1 m
- maximum height 1 m

A work plan of about 60 cm should be anticipated.

I - 2 Telephone sets

The telephone stands installed on desks are identical. They include:

- 1 operator post with call dial
- 5 line sets

All the sets ought to be adapted to a local battery and a central battery.

The combination should be capable of being replaced by a plug-in head set equipped with an extension cord.

The whole installation is intended to be joined to 5 circuits.

Thus, the sets of line no. 1 of the 5 stands are assembled and joined to circuit no. 1, the sets of line no. 2 are assembled and joined to circuit no. 2, etc.

The support of the relays can be common to the whole installation.

The operation of each line set is accomplished by push button contactors with incorporated signals and should permit the following 3 functions:

a) Call (reception and transmission)

Microphone and headphones in use

b) No call

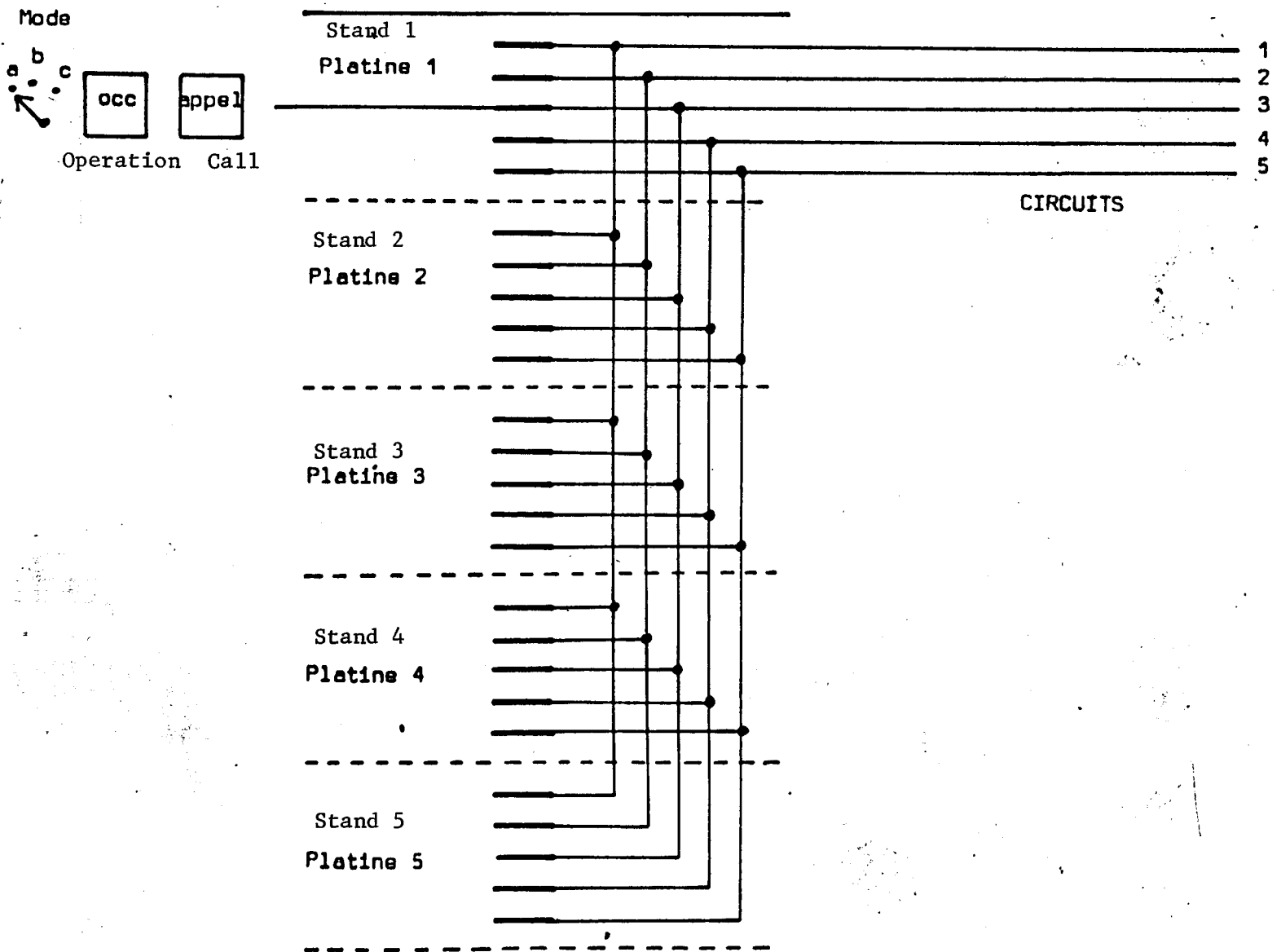
Microphone and headphones in use

An operation signal indicates that a communication is in progress.

c) No call

Only head phones in use.

An operation signal indicates that a communication is in progress



I - 3 Interphone sets

The interphone sets are intended to be joined to the automatic CNES interphone network. The terminal set is furnished by CNES.

I - 4 Telegraph equipment

This equipment is intended to link the EOLE operation center with the CNES transmission center. The terminal equipment type SAGEM SPE is furnished by CNES.

I - 5 Luminesce signaling (annex I)

The two signal light tables are both equipped with 2 columns of 8 red and green signals (32 signals per table) commanded from a desk.

The command contactors are push button with incorporated control lights.

The engaging of a red button causes the disengaging of the corresponding green one and vice versa. It is possible to disengage both signals.

The signaling can be in the form of a luminous synoptic table (annex II).

I - 6 Television

The video receivers are set into the desk. A 4 circuit commutator permits selecting the desired video signal.

The video signals are furnished by Philips television equipment installed in the operations room.

I - 7 Visualization equipment

The equipment is joined to the IBM 360/40 calculator on a multiplexed channel.

The function should take into account the following characteristics:

- the distance between the visualization equipment and the calculator is about 60 m;

- this equipment is intended only for the output of information.

The instructions are given to the calculator by means of the IBM 2740 typewriter;

- 2 consoles are anticipated. It should be possible to cause to appear simultaneously the same picture or a different picture on each console;

- on instruction, the calculator delivers only once, for the benefit of one or both consoles, the data relative to a picture. The equipment should assure the reproduction of the picture:

- the densest picture contains approximately:
 - . 100 vectors for the contour of the continent of the Southern Hemisphere;
 - . 30 vectors for the longitude and latitude grid;
 - . 100 vectors for the satellite track;
 - . 500 symbols for the position of the balloons.

I - 8 Peripheral 2740

The IBM 2740 equipment assures dialog between the IBM 360/40 calculator and the EOLE operations center. This input-output organ is already in service; it is joined to the calculator on a multiplex channel by a 2701 control unit.

I - 9 Peripheral 2260

This is an input-output equipment joined to the IBM 1800 calculator of the telemeasure treatment center.

I - 10 Slide projector

The information furnished by the calculator to the visualization consoles are on information office request on microfilm by a high speed electronic tracer (CALCOMP).

A projector capable of utilizing film strips (35 mm film) or slides (5 x 5) should permit visualization on a large screen.

I - 11 General situation table (annexes 3 and 4)

This is a wooden partition of about 10 cm of thickness which will be furnished and set up by CNES.

The equipment installed on this table is of the recessed or semi-recessed type.

II - Detail of the desks (annex V)

II- 1 Desk 1

This desk includes 3 work posts:

- Post A

- . 1 no. 1 visualization console
- . 1 telephone stand

- Post B

- . 1 IBM 2740 peripheral
- . 1 interphone

- Post C

- . 1 no. 2 visualization console
- . 1 telephone stand

The equipment associated with the visualization consoles is, if possible, fixed in boxes.

The power for this desk is taken from the general power supply. A stop-go button permits cutting or powering each post. Calibrated fuses protect the installation. Material should be grounded.

II - 2 Desk 2

This desk contains 3 work posts:

- Post D

- . 1 telephone stand,
- . 1 video receiver with 4 circuit selector,
- . 1 connection for joining IBM 2260.

- Post E

- . 1 telephone stand,
- . 1 interphone .
- . 1 distance command for luminous signaling

Is composed of 16 groups of 4 buttons:

- 1 red - 1 green equipment availability
- 1 red - 1 green stations availability

- . 1 fixed view projector

- Post F

- . 1 telephone stand
- 1 video receiver
- 1 teleprinter and its power system.

The power system of this desk is identical to that of desk 1.

ANNEX I

Signal light table

MOYENS MEANS	EQUIPEMENTS EQUIPMENT	TRANSMISSIONS TRANSMISSION
<div>BTY Battery</div>	<div>ROUGE Red</div> <div>VERT Green</div>	<div>ROUGE Red</div> <div>VERT Green</div> <div>JALUNE Yellow</div>

Equipment Red: unavailable
 Green: available

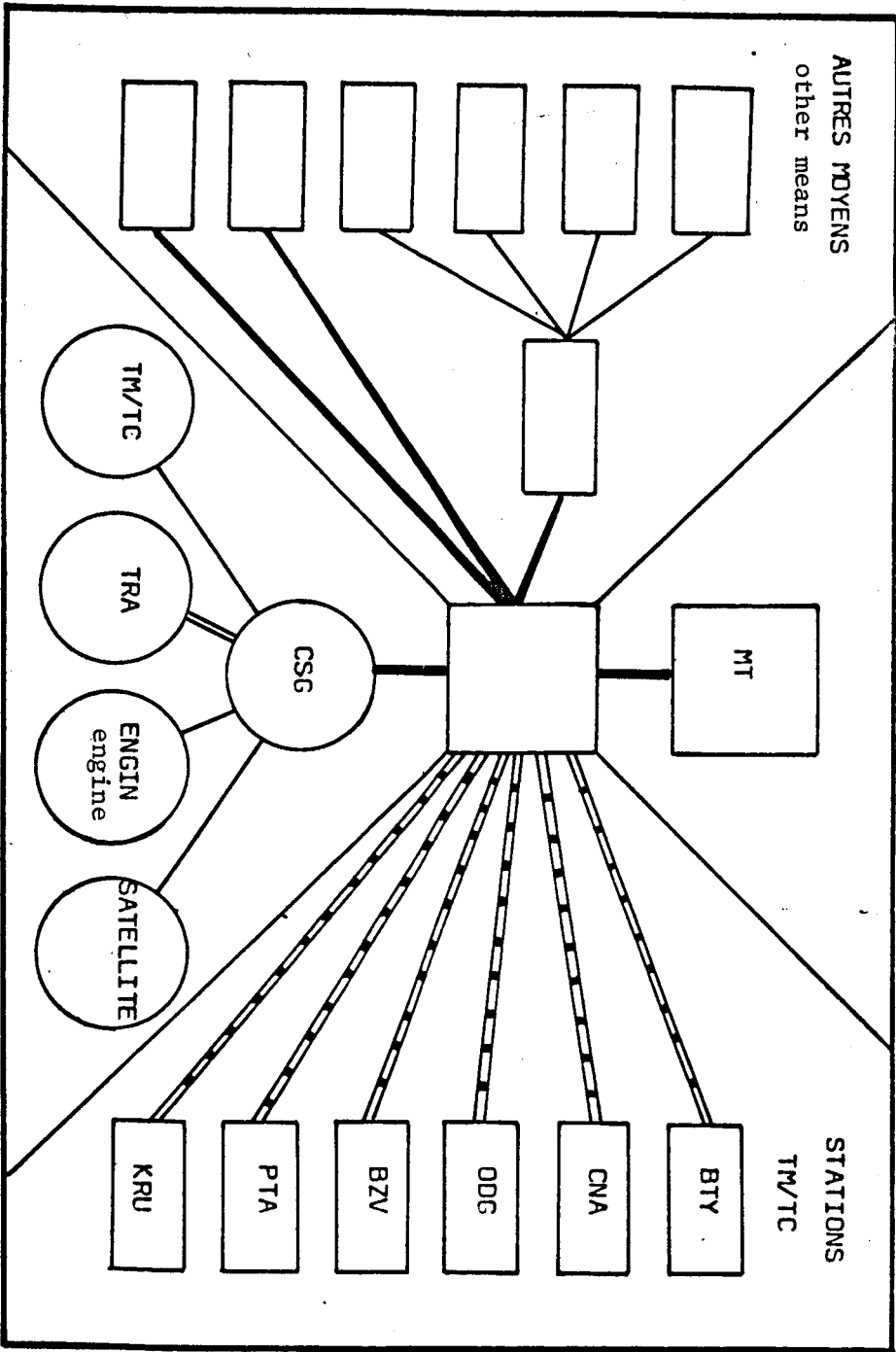
Transmission Red: unavailable
 Green: available
 Yellow: in operation

The command of the yellow signal is assured by the transmission equipment of 200 bauds.data.

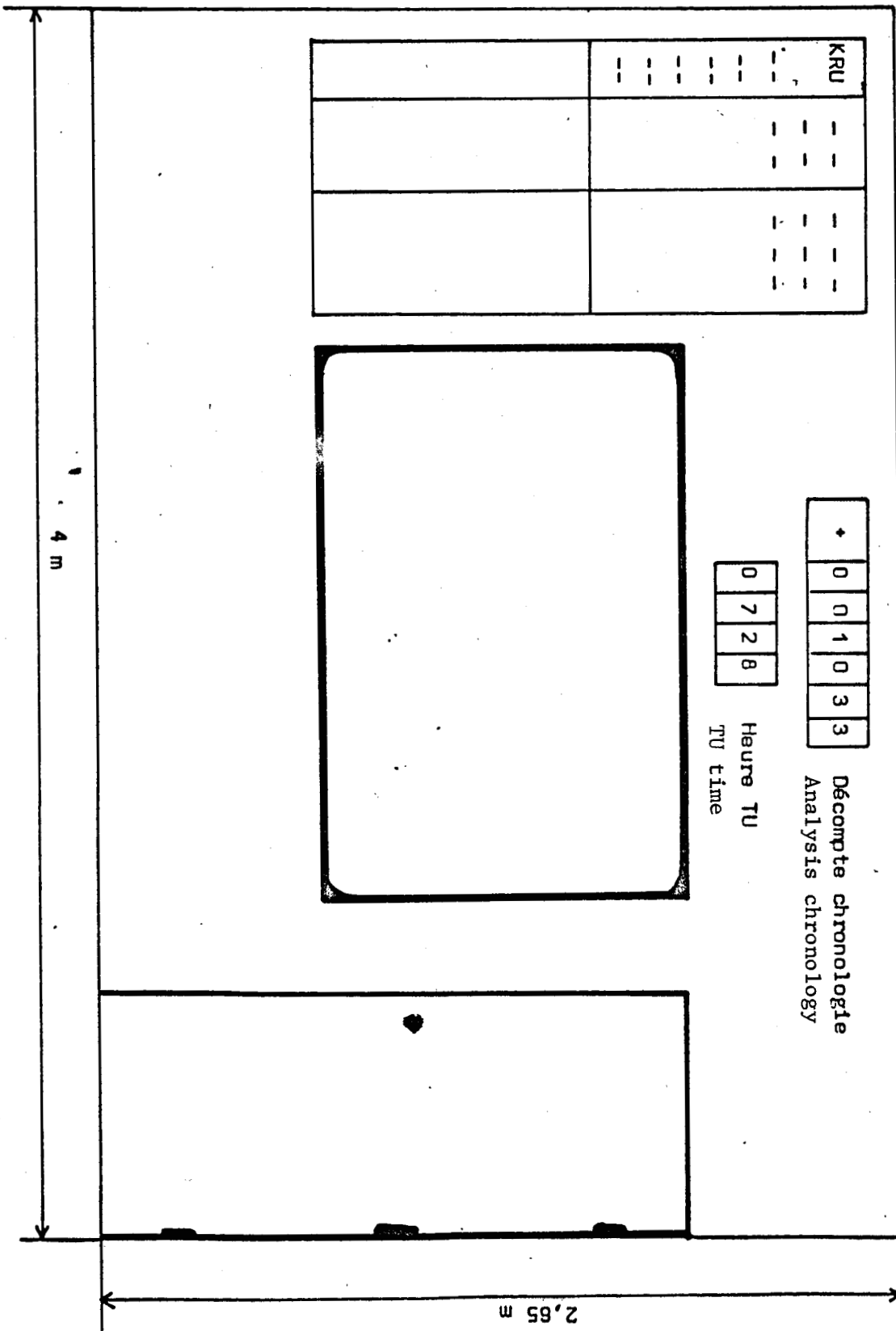
ANNEX II

LUMINOUS SIGNALING

Synoptic table



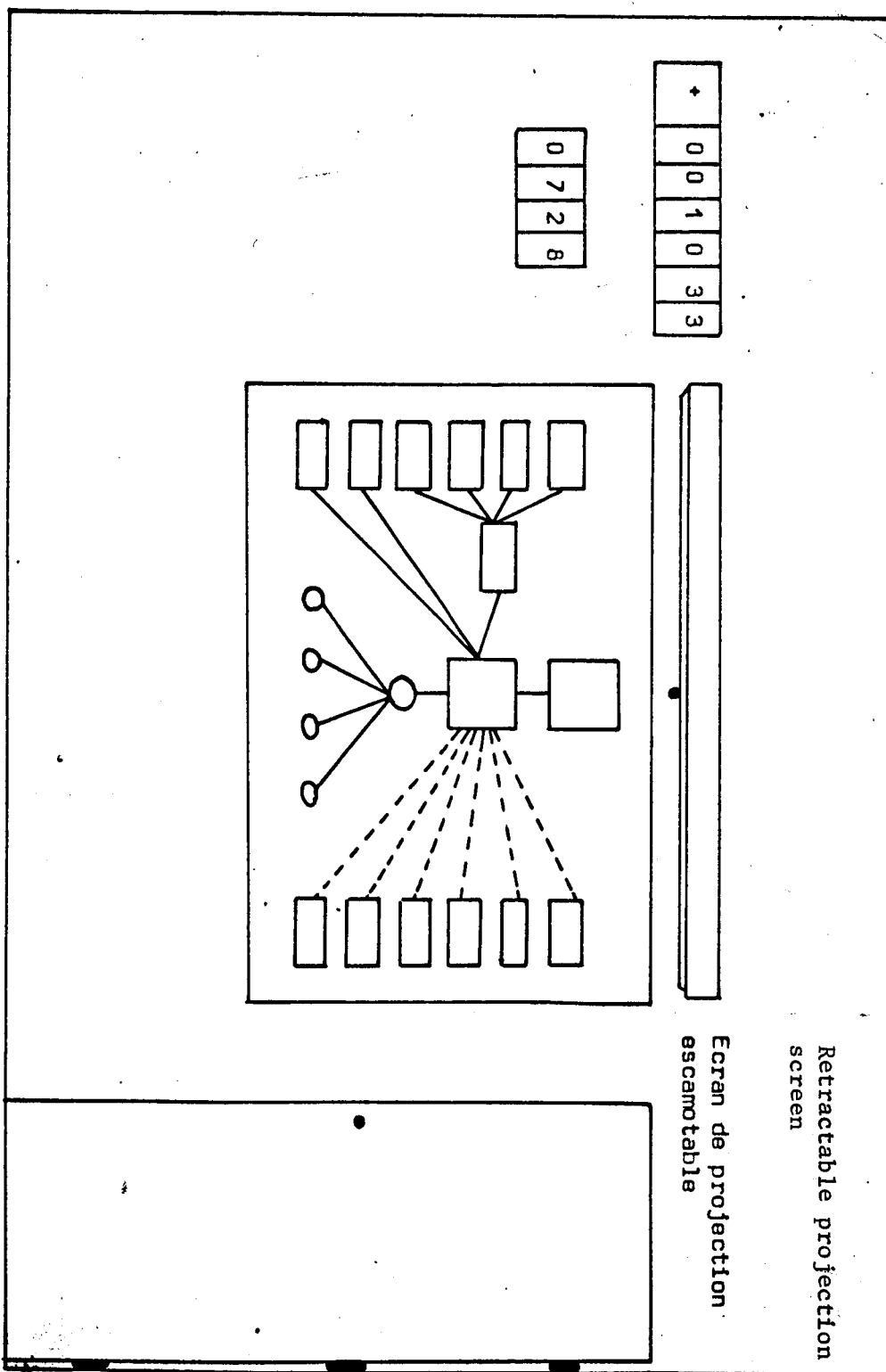
General situation table



ANNEX IV

General situation table

-11-



Air conditioning
gained
Gaine de
climatisation

4 m

Tableau de
situation générale
General situation
table

Desk 1

PUPITRE 1

Post A <u>Poste A</u> Visualization Visu 1 TELEPHONE	Post B <u>Poste B</u> IBM 2740 INTERPHONE	Post C <u>Poste C</u> Visualization Visu 2 TELEPHONE
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Desk 2

PUPITRE 2

Post D <u>Poste D</u> TELEPHONE TV IBM 2260	Post E <u>Poste E</u> TELEPHONE INTERPHONE Cde SIGNALI- SATION PROJECTION	Post F <u>Poste F</u> TELEPHONE TV TELETYPE
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Command signaling
projection

Entrée
Entrance

ANNEX V

- ANNEXE V -